Carcinoma of endocrine organs: Results of the RARECARE project

Jan Maarten van der Zwan a,*, Sandra Mallone b, Boukje van Dijk a, Magdalena Bielska-Lasota c, Renée Otter a, Roberto Foschi d, Eric Baudin e, Thera P. Links f, The RARECARE WG

a Department of Registry and Research, Comprehensive Cancer Centre the Netherlands, Catharijnesingel 55 – h Utrecht, The Netherlands
b Department of Cancer Epidemiology, Istituto Superiore di Sanità’, Viale Regina Elena 299, Rome, Italy
c National Institute of Public Health – National Institute of Hygiene, 24 Chocimska Street, Warsaw, Poland
d Department of Cancer Medicine, Fondazione IRCCS, Istituto Nazionale dei Tumori, Via Venezian 1, 20133 Milan, Italy
e Institut Gustave-Roussy, 39 Rue Camille Desmoulins, Villejuif Cedex, France
f University Medical Hospital Groningen, Hanzeplein 1, P.O.Box 30.001, 9700 RB Groningen, The Netherlands

Available online 21 February 2012

KEYWORDS
Rare cancer
Endocrine carcinoma
Population based study
Incidence
Prevalence
Survival
Europe

Abstract The rarity or the asymptomatic character of endocrine tumours results in a lack of epidemiological studies on their incidence and survival patterns. The aim of this study was to describe the incidence, prevalence and survival of endocrine tumours using a large database, which includes cancer patients diagnosed from 1978 to 2002, registered in 89 population-based cancer registries (CRs) with follow-up until 31st December 2003. These data give an unique overview of the burden of endocrine carcinomas in Europe.

A list of tumour entities based on the third International Classification of Diseases for Oncology was provided by the project Surveillance of rare cancer in Europe (RARECARE) project. Over 33,594 cases of endocrine carcinomas were analysed in this study. Incidence rates increased with age and were highest in patients 65 years of age or older. In 2003, more than 315,000 persons in the EU (27 countries) were alive with a past diagnosis of a carcinoma of endocrine organs. The incidence of pituitary carcinoma equalled four per 1,000,000 person years and showed the strongest decline in survival with increasing age. Thyroid cancer showed the highest crude incidence rates (four per 100,000 person years) and was the only entity with a gender difference: (female-to-male ratio: 2:9). Parathyroid carcinoma was the rarest endocrine entity with two new cases per 10,000,000 person years. For adrenal carcinoma, the most remarkable observations were a higher survival for women compared to men (40% compared to 32%, respectively) and a particularly low relative survival of 24% in patients 65 years of age or older.
More high quality studies on rare cancers, with additional information, e.g. on stage and therapeutic approach, are needed and may be of help in partly explaining the observed variation in survival.

© 2012 Elsevier Ltd. All rights reserved.

1. Introduction

Endocrine tumours arise from hormone secreting endocrine glands such as pituitary, thyroid, parathyroid and adrenal glands and can be separated from the neuroendocrine tumours based on histology. Endocrine tumours have in common that all are negative for granules like Chromogranine A. Either the rarity or the asymptomatic character of endocrine tumours results in a lack of epidemiological studies on their incidence and survival patterns. The available studies for endocrine tumours, with the exception of thyroid cancer, are generally based on case reports or clinical series and cannot be used as a reference because of unavoidable selection bias.

In the present study, population-based data from different European cancer registries (CRs) participating in the RARECARE project, were used to estimate the burden of endocrine tumours. The RARECARE project produced a list of tumours based on both cancer topographies and morphologies according to the third revision of the International Classification of Diseases for Oncology (ICD-O-3), which is probably more useful for the health care organisation than the one usually adopted which is based on the anatomic site only. An incidence rate less than 6/100,000 per year was used as a threshold for rarity.

The aim of this work was to provide the clinicians information currently available on basic indicators like incidence, prevalence and survival on rare endocrine tumours. For the first time ever complete prevalence estimates will be reported for this specific group of rare tumours.

2. Material and methods

2.1. Tumour grouping

In the present work, we describe the burden of carcinomas of the pituitary, thyroid, parathyroid and adrenal glands. A new operational definition and order of all rare tumour entities was established by the ‘Surveillance of rare cancer in Europe project’ (RARECARE) working group in consensus with delegates of organizations representing the majority of the European clinicians and pathologists. This resulted in a rationale for and grouping of tumour entities in two different tiers; the tier 1 tumour entities require the same clinical expertise and patient referral pattern structure and is created by grouping tier 2 entities. The tier 2 tumour entities require specific clinical management and research. Tumour entities were considered rare and therefore included if the incidence rate was less than six per 100,000 per year. The selection and definition of rare endocrine carcinomas according to the ICD-O-3 is shown in Table 1.

For this study the tier 1 included is the carcinoma of endocrine organs, including the tier 2 entities carcinoma of the pituitary-, thyroid-, parathyroid- and adrenal gland. Neuroendocrine thyroid cancers (ICD-O-3 morphology codes: 8041, 8510, 8345-8347) are excluded and will be described in another article on Neuroendocrine tumours. Therefore the medullary carcinoma NOS, medullary carcinoma with amyloid stroma, mixed medullary-follicular carcinoma and the mixed medullary-papillary thyroid cancers are excluded for analyses (1764 cases).

2.2. Cancer registry (CR) selection and population coverage

RARECARE gathered data from the EUROCARE-4 study which was based on cancer patients diagnosed from 1978 to 2002, archived in 89 population-based CRs and with vital status information available up to at least 31st December 2003. The EUROCARE-4 study does not provide information on stage because this information is not standardised among registries. The mean population covered was about 162,000,000 corresponding to 39% of the population of the 21 countries participating in RARECARE. The European member states were covered for 32% of the total population by the RARECARE project. For 11 countries, CRs covered the entire national population (Austria, Iceland, Ireland, Malta, Norway, Slovakia, Slovenia, Sweden, Northern Ireland, Scotland and Wales). The other 10 countries (Belgium, England, France, Germany, Italy, Poland, Portugal, Spain, Switzerland and The Netherlands) were represented by regional CRs, covering variable proportions of their respective national populations.

2.2.1. Data selection for incidence analysis

Incidence rates were estimated after the exclusion of CRs which did not classify cancers according to the ICD-O-3 and specialised registries. Rates were calculated as the number of new primary malignant cases occurring from 1995 to 2002 divided by the total persons-years in the general population (male and female). The standard European population was used to calculate age-standardised rates. The age-adjusted incidence